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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Atakan Peker

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EXAMINER

WYSZOMIERSKI, GEORGE P

ART UNIT

PAPER NUMBER

1733

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/523,465	<b>Applicant(s)</b> PEKER ET AL.	
	<b>Examiner</b> George P. Wyszomierski	<b>Art Unit</b> 1733	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2010 and 22 October 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,5,8-10,12,17-20 and 37-61 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,8-10,12,17-20, 37-43 and 45-61 is/are rejected.
- 7) ☒ Claim(s) 44 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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1. The Amendment filed October 22, 2010 has been entered. Claims 1, 2, 4, 5, 8-10, 12, 17-20, and 37-61 are pending in this application.

2. Claims 18, 19 and 60 are objected to as follows:

a) In claim 18, line 3, the words “consisting” and “alumina” are misspelled.

b) In claim 19, line 2, “selection” should be amended to read “section”.

c) In the formula in claim 60, the subscript “x” should be changed to a subscript “y”.

3. Claims 9, 10, 43, 52 and 58 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a) In claims 9 and 43, it is unclear what is meant by “based on ferrous metals”. Does this mean the material is based on iron, or is it based on one or more of what are generally known as “iron-group metals”, i.e. Fe, Co and Ni?

b) Claims 52 and 58 state that the alloy “lacks any microstructure”. The examiner submits that this is incorrect; even a completely amorphous alloy will have a microstructure, albeit one without any crystalline phases. The examiner suggests amending this to read “lacks any crystal structure”.

c) Claims dependent on any of the above are likewise rejected under this statute.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 4, 5, 8, 12, 19, 20 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peker et al. (U.S. Patent 5,368,659), in view of Applicant's admissions in the specification, and further in view of Shimizu et al. (U.S. Patent 6,749,698).

Claims 1, 2, 4, 5, 8, 12, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (U.S. Patent 5,618,359), in view of Applicant's admissions in the specification and Shimizu et al.

The Peker '659 and Lin '359 patents disclose bulk-solidifying amorphous alloys free of Al, meeting the compositional limitations of instant claim 2, and at least 0.5 mm thick as recited in instant claim 19. With respect to claim 51, the Peker '659 alloys comprise Be. With respect to claim 12, the prior art alloys may be at least 50% but less than 100% amorphous, i.e. they may comprise a crystalline phase; see column 12 of Peker '659 or column 7 of Lin '359. The Tables of Peker indicate numerous examples of such alloys having a glass transition temperature and hardness values as recited in the instant claims. (In this regard, the examiner is assuming that the Vickers hardness values disclosed by Peker are in  $\text{kgf/mm}^2$ , in which case 4 GPa would be equal to about 400 Hv).

Peker '659 and Lin '359 do not disclose the remainder of the properties as recited in the instant claims. However,

i) The properties as claimed would result largely from the composition of the alloy. Because the actual compositions of the prior art and the claimed may be the same, one of skill in the art would expect the prior art alloys to possess these properties to the same degree as the claimed materials.

ii) At page 4 of the specification as filed, Applicant incorporates the Peker and Lin patents by reference, and recites preferable alloy families within those references. In the paragraph overlapping pages 4-5, Applicant states that “These bulk-solidifying amorphous alloys” (referring to the preferable families mentioned above) have the properties as presently claimed. It is further noted that the preferable alloy families are substantially identical to preferable compositions in Peker ‘659 and Lin ‘359.

Thus, the examiner’s position is that Peker ‘659 and Lin ‘359 disclose preferred alloy compositions that possess the same properties as set forth in the instant claims.

Peker ‘659 and Lin ‘359 do not mention a “dental prosthesis” or “a replication of at least one surface feature of at least one tooth”. The examiner’s position is that:

i) These limitations do not describe materials of any specific shape, i.e. the surface may be flat, curved, or otherwise variable in height, depth, etc. and still fall within the limitations as claimed.

ii) Shimizu indicates that it was known in the art, at the time of the invention, to employ bulk-solidifying amorphous alloys in making medical and dental materials.

Thus the disclosure of either of Peker et al. ‘659 or Lin et al. ‘359, when combined with the known properties of the alloys described in those patents and with

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Shimizu et al., would have taught a material as presently claimed to one of ordinary skill in the art.

6. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peker et al. '659 or Lin et al. '359 in view of Applicant's admissions and Shimizu et al., as set forth above, and further in view of Oshida (U.S. Patent 6,066,176) or Fischer et al (U.S. Patent 6,306,206).

Peker, Lin and Shimizu do not discuss the resin cement or reinforcement material as recited in the instant claims. Oshida and Fischer both indicate such a material to be conventional in the art of making orthopedic implants and/or dental cements. Thus, it would have been an obvious expedient for one of ordinary skill in the art, making a dental prosthesis of the material of Peker '659 or Lin '359 as taught by Shimizu, to further include the presently claimed cement/primer/oxide material therewith.

7. Claims 37, 38, 40, 41, 42, 45, 46, 47, 49, 50 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peker et al. '659 in view of Applicant's admissions in the specification.

Claims 37, 38, 40, 41, 42, 45-50 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. '359 in view of Applicant's admissions in the specification.

Claims 37-42, 45, 46, 48, 49, 50 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (U.S. Patent 5,735,975) in view of Applicant's admissions in the specification.

The Peker '659 and Lin '359 and '975 patents disclose bulk-solidifying amorphous alloys at least 0.5 mm in thickness and meeting the compositional requirements of claims 38 (Peker '659, Lin '359 and '975), 39 (Lin '975), and 50 (Peker '659, Lin '359 and '975). The Peker '659 and Lin '359 compositions are Al free, and the Lin '359 and '975 compositions are Be free. With respect to the claimed "object comprising a replication of at least one surface feature of a near-to-net shape object", the examiner's position is that this does not define any particular shape of an object, i.e. virtually any object can be cast in a near-to-net shape. The Peker '659 patent further discloses numerous examples of such compositions having glass transition temperatures and hardness values as claimed.

The prior art does not disclose the remainder of the properties as recited in the instant claims. However,

i) The properties as claimed would result largely from the composition of the alloy. Because the actual compositions of the prior art and the claimed may be the same, one of skill in the art would expect the prior art alloys to possess these properties to the same degree as the claimed materials.

ii) At page 4 of the specification as filed, Applicant incorporates the Peker and Lin patents by reference, and recites preferable alloy families within those references. In the paragraph overlapping pages 4-5, Applicant states that "These bulk-solidifying

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amorphous alloys" (referring to the preferable families mentioned above) have the properties as presently claimed. It is further noted that the preferable alloy families are substantially identical to preferable compositions in Peker '659 and Lin '359 and '975.

Thus, the examiner's position is that one of ordinary skill in the art would have been taught preferred alloy compositions (and objects made therefrom) that possess the same properties as set forth in the instant claims from the disclosures of Peker '659, Lin '359, or Lin '975, particularly in view of the fact that Applicant has stated that the preferred compositions of those references possess the claimed properties.

8. Claims 53, 54, and 57-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (U.S. Patent 6,325,868).

Kim discloses Ni base, bulk-solidifying amorphous alloys having compositions as recited in instant claims 59-61 and glass transition temperatures as presently claimed. With respect to the claimed "object comprising a replication of at least one surface feature of a near-to-net shape object", the examiner's position is that this does not define any particular shape of an object, i.e. virtually any object can be cast in a near-to-net shape. Kim does not disclose the remainder of the properties as defined in the instant claims. However, given that the actual compositions of the exemplary embodiments of Kim and those as claimed may be identical, one of ordinary skill in the art would believe that their attendant properties would likewise be the same. Thus, no patentable distinction is seen between the materials as disclosed by Kim et al. and those as presently claimed.



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9. Claims 53, 55, 56 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Inoue et al. Applied Physics Letters article (incorporated by reference on page 5 of the present specification).

Inoue discloses bulk-solidifying amorphous alloys comprising Fe, Ni and Co and having glass transition temperatures and hardness values as presently claimed. With respect to the claimed "object comprising a replication of at least one surface feature of a near-to-net shape object", the examiner's position is that this does not define any particular shape of an object, i.e. virtually any object can be cast in a near-to-net shape. Inoue does not disclose the remainder of the properties as defined in the instant claims. However, given that the actual compositions of the exemplary embodiments of Inoue and those as claimed may be identical, one of ordinary skill in the art would believe that their attendant properties would likewise be the same. Thus, no patentable distinction is seen between the materials as disclosed by Inoue et al. and those as presently claimed.

10. The examiner agrees that materials as defined in the claims as amended were described in the specification as originally filed, and thus the previous rejection under 35 USC 112 1<sup>st</sup> paragraph has been overcome. However, the amendment has considerably broadened the scope of the claims such that prior art, as indicated supra, is applicable to the majority of the instant claims.

11. Claims 9, 10 and 43 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of

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the limitations of the base claim and any intervening claims. Claim 44 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not disclose or suggest an Fe-base alloy having all the properties as recited in instant claims 1 or 37, or one with all such properties including a hardness of 7.5 GPa and higher.

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Wyszomierski whose telephone number is (571) 272-1252. The examiner can normally be reached on Monday thru Friday from 8:00 a.m. to 4:30 p.m. Eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on (571) 272-1244. All patent application related correspondence transmitted by facsimile must be directed to the central facsimile number, (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/George Wyszomierski/  
Primary Examiner  
Art Unit 1733

GPW  
December 21, 2010